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Computer Simulations for Top Flavor-changing Neutral Higgs Interactions[1] JACKSON SLOAN, CHUNG KAO, RISHABH JAIN, BRENT MCCOY, Univ of Oklahoma — Two-Higgs-doublet models (2HDM) are natural extensions to the Standard Model (SM), and a general 2HDM allows tree-level flavor-changing neutral currents (FCNC). We choose this model for our analysis. Since the top quark is heavier than the light Higgs, $t \to ch$ is kinematically possible, and a tch coupling is an accessible example of an FCNC. We look to FCNCs to study physics beyond the Standard Model, and, more specifically, to examine the potential for discovery of a flavor-changing neutral Higgs (FCNH) interaction at the LHC. We examine the discovery potential for the processes $pp \to th \to bjjWW \to bjjl\nu l\nu + X$ and $pp \to t\bar{t} \to bjjcWW + X$, using MadGraph to generate parton level calculations, Pythia for showering and hadronization, and Delphes for detector simulation. We use ROOT analysis to reconstruct the transverse mass $m_T(ll, E_T)$. We examine these processes and present event rates and significance of the Higgs signal, including SM physics background with realistic acceptance cuts for $\sqrt{s} = 13$ TeV and $\sqrt{s} = 14$ TeV.

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